

WHAT IS CLAIMED IS:

- 1           1.       A method of locating a mobile terminal in a mobile communications  
2 network, the method comprising the steps of:  
3           detecting when said mobile terminal has entered a new roaming area, said new  
4 roaming area being comprised of two or more location areas, each of said two or more  
5 location areas being comprised of one or more cells;  
6           obtaining roaming area information of said new roaming area;  
7           storing said roaming area information in a database; and  
8           primary paging said mobile terminal within said new roaming area using said  
9 roaming area information stored in said database.
- 1           2.       The method according to claim 1, wherein said new roaming area is  
2 within a current mobile switching center service area.
- 1           3.       The method according to claim 2, wherein said step of storing includes  
2 sending a update subscriber data message having said roaming area information to said  
3 database.

1           4.     The method according to claim 3, wherein said update subscriber data  
2     message is based on a mobile applications protocol.

1           5.     The method according to claim 3, further comprising receiving an  
2     update subscriber acknowledgment or negative acknowledgment message from said  
3     database.

1           6.     The method according to claim 1, wherein said new roaming area is  
2     within a new mobile switching center service area.

1           7.     The method according to claim 6, wherein said step of storing includes  
2     sending a subscriber data request message having said roaming area information to said  
3     database.

1           8.     The method according to claim 7, wherein said subscriber data request  
2     message is based on a mobile applications protocol.

1           9.     The method according to claim 1, further comprising retrieving said  
2     stored roaming area information from said database.

1           10.    The method according to claim 9, wherein said retrieving step includes  
2   receiving a subscriber data message including said stored roaming area information  
3   from said database.

1           11.    The method according to claim 10, wherein said subscriber data  
2   message is based on a mobile applications protocol.

1           12.    The method according to claim 9, wherein said retrieving step includes  
2   receiving a terminating call routing message including said stored roaming area  
3   information from said database.

1           13.    The method according to claim 12, wherein said terminating call  
2   routing message is based on a mobile applications protocol.

3           14.    The method according to claim 12, wherein said roaming area  
4   information is subsequently included in an initial address message of an ISUP message.

1           15.    The method according to claim 1, wherein said roaming area  
2   information includes a roaming area identity.

1           16.    The method according to claim 1, wherein said roaming area  
2   information includes a location area identity.

1           17.    The method according to claim 1, wherein said database includes a  
2   home location register.

1           18.    The method according to claim 1, wherein said database includes a  
2   guest location register.

1           19.    The method according to claim 1, wherein said database includes a  
2   mobile switching center/visitor location register.

1           20.    The method according to claim 1, wherein said step of detecting  
2   includes detecting when said mobile terminal enters a new location area, said new  
3   location area being associated with said new roaming area.

1           21.     The method according to claim 20, wherein said new location area is  
2     within the middle of said new roaming area.

1           22.     A system for locating a mobile terminal in a mobile communications  
2     network, comprising:

3           a mobile switching center adapted to detect when said mobile terminal has  
4     entered a new roaming area and to obtain a roaming area information of said new  
5     roaming area, said new roaming area being comprised of two or more location areas,  
6     each of said two or more location areas being comprised of one or more cells ; and

7           a database connected to said mobile switching center and configured to store  
8     said roaming area information; wherein

9           said mobile switching center is further adapted to issue a primary page for said  
10    mobile terminal within said new roaming area using said roaming area information  
11    stored in said database.

1           23.     The system according to claim 22, wherein said mobile terminal is  
2     already known in a service area of said mobile switching center.

1           24.     The system according to claim 23, wherein said mobile switching center  
2     is further adapted to send a update subscriber data message including said roaming  
3     area information to said database.

1           25.     The system according to claim 24, wherein said update subscriber data  
2     message is based on a mobile applications protocol.

1           26.     The system according to claim 24, wherein said database is further  
2     configured to send an update subscriber acknowledgment or negative acknowledgment  
3     message to said mobile switching center.

1           27.     The system according to claim 22, wherein said mobile terminal is new  
2     in a service area of said mobile switching center.

1           28.     The system according to claim 27, wherein said mobile switching center  
2     is further adapted to send a subscriber data request message including said roaming  
3     area information to said database.

1           29.     The system according to claim 28, wherein said subscriber data request  
2     message is based on a mobile applications protocol.

1           30.     The system according to claim 23, wherein said database is further  
2     configured to send said stored roaming area information back to said mobile switching  
3     center.

1           31.     The system according to claim 30, wherein said stored roaming area  
2     information is sent back to said mobile switching center in a subscriber data message.

1           32.     The system according to claim 31, wherein said subscriber data  
2     message is based on a mobile applications protocol.

1           33     The system according to claim 22, wherein said database sends said  
2     roaming area information to a transit mobile switching center via a terminating call  
3     routing message.

1           34.     The system according to claim 33, wherein said terminating call routing  
2     message is based on a mobile applications protocol.

1           35.    The system according to claim 33, wherein said roaming area  
2 information is subsequently included in an initial address message of an ISUP message.

1           36.    The system according to claim 22, wherein said database sends said  
2 roaming area information to a gateway mobile switching center via a terminating call  
3 routing message.

1           37.    The system according to claim 36, wherein said terminating call routing  
2 message is based on a mobile applications protocol.

1           38.    The system according to claim 36, wherein said roaming area  
2 information is subsequently included in an initial address message of an ISUP message.

1           39.    The system according to claim 22, wherein said roaming area  
2 information includes a roaming area identity.

1           40.    The system according to claim 22, wherein said roaming area  
2 information includes a location area identity.



1           41.    The system according to claim 22, wherein said database includes a  
2   home location register.

1           42.    The system according to claim 22, wherein said database includes a  
2   guest location register.

1           43.    The system according to claim 22, wherein said database is said mobile  
2   switching center.

1           44.    The system according to claim 22, wherein said mobile switching center  
2   detects when said mobile terminal enters a new location area, said new location area  
3   being associated with said new roaming area.

1           45.    The system according to claim 44, wherein said new location area is  
2   within the middle of said new roaming area.